

REMARKS

The present amendment is believed to place this application in condition for allowance.

There were three issues raised in the outstanding Official Action.

First, claims 52-57 were rejected under the first paragraph of 35 USC §112, as being based on an insufficient written description as regards the recitation in claim 52 of "at least 0.5g per hectoliter." The Examiner questioned where support for that recitation could be found in the specification.

In response, applicants note the disclosure at page 4, lines 22-28, that the amount of extract preparation may "in general" be between 0.5 and 20 g/hl; as well as the disclosure in original claim 7 that the amount of extract preparation is between 0.5 and 30 g/hl. Those passages are believed to provide a sufficient written description of the "at least 0.5g per hectoliter" recitation in claim 52, as well as to demonstrate that there is no criticality as to any particular upper limit of extract to be added.

It is therefore believed that the rejection of claims 52-57 under the first paragraph of 35 USC §112 should be withdrawn.

Second, dependent claim 55 was rejected for indefiniteness, based on the use of the term "about." By the present amendment, that term is deleted from claim 55.

Third, claims 52-57 were rejected under 35 USC §103(a) as allegedly being unpatentable based on HOELLE et al. 3,222,181. That rejection is respectfully traversed, for the following reasons.

HOELLE et al. do not disclose or suggest the use of a hop extract containing at least 20% anhydrogalacturonic acid (AUA), as is required by the independent claim 52. The Examiner acknowledges that there is no express disclosure in HOELLE et al. as to the AUA content of the extracts described therein, but contends that the burden is on applicants to show that the extract of HOELLE et al. would not inherently have hop pectin.

In response to the above contention, applicants note first that their position is not that the HOELLE et al. extracts are necessarily entirely devoid of hop pectin, but, rather, that the skilled artisan would recognize that to the extent the HOELLE et al. extracts contain hop pectin, it is present in amounts much lower than the minimum AUA content required by the pending claims.

Attached is a copy of a page taken from the European Brewery Convention (1997). The attached page contains a table reciting the main components of hop cones. From the table, it is evident that hop cones contain a large fraction of water soluble components that are virtually insoluble in organic solvents, notably polyphenols, tannins, monosaccharides, amino acids, proteins, pectins and ash salts. It can be calculated from the

table that together these water soluble components constitute between 35% (32/92x100%) and 40% (35/88x100%) by weight of the dry solids contained in the hop cones.

In HOELLE et al., hop cones are extracted first with an organic solvent, followed by extraction of the extraction residue with hot caustic water. The extraction with the organic solvent removes the essential principles from the hop cones, particularly the alpha acids, beta acids and essential oil. As can be deduced from the aforementioned table, this means that between 4.5 and 30% of the components contained in the hop cones are extracted. The extraction with the organic solvent will remove not more than insignificant quantities of the aforementioned water soluble components, including pectin.

Following the extraction with an organic solvent, HOELLE et al. teach to extract the residue with boiling caustic water. The aqueous extract thus obtained will contain the aforementioned water soluble components, i.e. polyphenols, tannins, monosaccharides, amino acids, proteins, pectins and ash salts. Since pectin represents only around 6% of these water soluble components, it can be calculated that the aqueous extract may contain up to about 6% pectin by weight of dry matter. However, since a significant fraction of the cellulose-lignins (40-50% of the hop cones) will also dissolve into the boiling water under the caustic conditions taught by HOELLE et al., the actual pectin content of the aqueous extract will be

significantly lower than 6% by weight of dry matter. Thus, also the anhydrogalacturonic acid content of the aqueous extract will be significantly less than 6% on a dry weight basis.

In addition, it is noted that HOELLE et al. teach to combine 70-80% of the organic solvent extract with 20-30% of the aqueous extract before it is employed in the brewing process (see claim 2). Consequently, it can be calculated that the HOELLE et al. teach to employ a (recombined) hop extract that contains significantly less than 1.8% anhydrogalacturonic acid by weight of dry matter, i.e. much less than the minimum content of 20% anhydrogalacturonic acid on a dry weight basis required by claim 52.

The attached Rule 132 Declaration of Dr. A.C.A.P.A. Bekkers confirms these points.

The Bekkers declaration reproduces the teachings of HOELLE et al. by preparing hop extracts using the methodology of HOELLE et al., and goes on to determine the anhydrogalacturonic acid content of the extracts thus obtained. As is evident from the declaration, it was found that the aqueous extracts according to HOELLE et al. contain only about 3% anhydrogalacturonic acid by weight of dry matter, which is well in line with the theoretically expected content. From this it can be calculated that the recombined hop extract advocated by HOELLE et al. for use in beer will contain not more than 0.9% anhydrogalacturonic acid by weight of dry matter, i.e. again

much less than the minimum content of 20% anhydrogalacturonic acid on a dry weight basis required by claim 52.

As the Examiner is aware, the position that HOELLE et al. inherently disclose the extract used in the claimed method would require that the inherency be certain. See, e.g., *Ex parte Cyba*, 155 USPQ 756 (Bd. App. 1966). Inherency must be a necessary result, and not merely a possible result. *In re Oelrich*, 212 USPQ 3232 (CCPA 1981); *Ex parte Keith et al.*, 154 USPQ 320 (Bd. App. 1966).

As the above discussion and the attached declaration demonstrate, in this case it is clear that by following the teachings of the reference, an extract as required by the present claims necessarily will not result.

There is furthermore nothing in HOELLE et al. to suggest increasing the AUA content by a factor of more than 20 in relation to the combined extract that HOELLE et al. actually adds to beer, in order to produce an extract as claimed. Indeed, paragraph 11 of the attached Bekkers declaration demonstrates wherein the techniques disclosed in HOELLE et al. are incapable of producing such an extract.

HOELLE et al. further fail to disclose or suggest the claimed method in that nothing in the reference suggests that a hop extract of whatever composition should be added to the wort after commencement of wort boiling and not earlier than 30 minutes before the end of wort boiling, as required by the


independent claim 52.

It is therefore believed to be apparent that the rejection based on HOELLE et al. should be withdrawn.

In view of the present amendment and the attached declaration and the foregoing remarks, therefore, it is believed that this application has been placed in condition for allowance with claims 52-57, as amended. Allowance and passage to issue on that basis are accordingly respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17. Respectfully submitted,

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**Appendix:**

The Appendix includes the following items:

- copy of a page taken from the European Brewery Convention (1997)
- Rule 132 Declaration of Dr. A.C.A.P.A. Bekkers